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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/580,552

05/26/2006

Beverley Brown

MERCK-3181

5966

23599

7590

06/27/2008

MILLEN, WHITE, ZELANO & BRANIGAN, P.C.

2200 CLARENDON BLVD.

SUITE 1400

ARLINGTON, VA 22201

EXAMINER

NWAONICHA, CHUKWUMA O

ART UNIT

PAPER NUMBER

1621

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/580,552	Applicant(s) BROWN ET AL.	
	Examiner CHUKWUMA O. NWAONICHA	Art Unit 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☒ Claim(s) 1, 2, 6-8, 23-26 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Current Status

1. Claims 1-28 are pending in the application.
2. This action is responsive to Applicants' Remarks of 5 May 2008.
3. The obviousness-type double patenting rejection of claim 2 is withdrawn because Applicants have filed a Terminal Disclaimer
4. The allowability of claims 1, 3-28 is withdrawn in favor of the new rejections.

Claim Objection

Claims 1, 2, 6, 7, 8, 23-26 and 28 are objected because the structures in the claims are not legible. A new set of clear and legible structures are required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 21 and 22 are rejected under 35 U.S.C. 112, first paragraph, because the specification, does not reasonably provide enablement for “**all electronic devices** comprising an organic semiconducting layer” as claimed.

The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

The standard for determining whether the specification meets the enablement requirement is whether experimentation needed to practice the invention is undue or unreasonable. Accordingly, even though the forgoing statute does not use the term "undue experimentation," it has been interpreted to require that the claimed invention be enabled so that any person skilled in the art can make and use the invention without undue experimentation. See M.P.E.P. § 2164.

In the instant case, the claims cover "**all electronic devices** comprising an organic semiconducting layer". Based on the above standards, the disclosure must contained sufficient information to enable one skilled in the pertinent art to use this invention without undue experimentation. See M.P.E.P. 2164.01. Given the scope of the claims, it does not, because "**all electronic devices** comprising an organic semiconducting layer" without the drawings and descriptions is speculative.

The Examiner understands that there is no requirement that the specification disclose every possible embodiment if there is sufficient guidance given by knowledge in the art (See M.P.E.P. § 2164.05(a)). However, the instant case goes beyond what is known in the art, because the specification does not offer any guidance on how one of ordinary skill would go about practicing the invention from the claim to "**all electronic devices** comprising an organic semiconducting layer".

Here, the requirement for enablement is not met since the claims go far beyond the enabling disclosure. Based on the forgoing, **claims 21 and 22** are *prima facie* non-enabled for their full scope.

With regard to rejection under 35 U. S. C. 112, first paragraph, the following factors have been carefully considered (*In re Wands*, 8 USPQ2d 1400; CAFC, 1988):

1. the nature of the invention,
2. the state of the prior art,
3. the predictability or lack thereof in the art,
4. the amount of direction or guidance present,
5. the presence or absence of working examples,
6. the breadth of the claims,
7. the quantity of experimentation needed, and
8. the level of the skill in the art.

- (1) **Nature of the invention.** As indicated above, the invention is drawn to “**all electronic devices** comprising an organic semiconducting layer”.
- (2) **Breadth of the Claims.** The claims are extremely broad. In particular, **claims 21 and 22** that read on specifically “**all electronic devices** comprising an organic semiconducting layer”. Applicants have failed to exactly show the type of “**electronic device** comprising an organic semiconducting layer” they are claiming.
- (5) **Amount of Guidance Provided.** Applicants have provided no guidance about the **electronic device** comprising an organic semiconducting layer. However, when considering that the claims read on “**all electronic devices** comprising an organic semiconducting layer”, it becomes critical to know the type of **electronic device** comprising an organic semiconducting layer Applicants are claiming. This is critical to the practice of the invention and therefore should adequately be disclosed.
- (6) **Presence or Absence of Working Examples.** There are no examples of the **electronic device** comprising an organic semiconducting layer disclosed.

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(7) **Ordinary Skill in the Art.** The ordinary skill artisan would not be able to practice the claimed invention with the current disclosure. There are no drawings or descriptions of the **electronic devices** comprising an organic semiconducting layer.

Thus, it can safely be concluded that the instant disclosure fails to provide an enabling disclosure for “**all electronic devices** comprising an organic semiconducting layer”.

The Examiner suggests that Applicants provide the drawing and description of the electronic device they are claiming.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

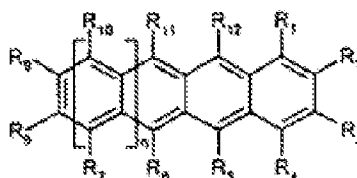
obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al., {WO 0245184, same as US 7,095,044} in view of Minakata, {WO 2003016599, same as US 7,061,010}.

Applicants claim substituted polyacene compounds, an organic semiconducting layer formulation and electronic devices with an active ingredient of the general formula I; wherein all the variables are as defined in the claims.



formula I

Determination of the scope and content of the prior art (M.P.E.P. §2141.01)

Brown et al. teach a field effect transistor semiconductor layer formulation comprising a polyacene compounds and organic binders, and electronic devices. The organic binders have inherent conductivity of less than 10^{-6} Scm^{-1} and a permittivity at 1000 Hz of less than 3.3. The organic binders are homopolymers of styrene. See columns 3-9, the examples and the claims.

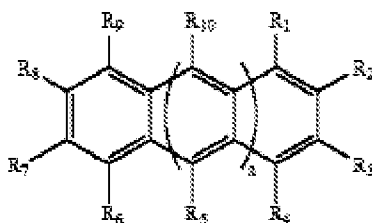
Ascertainment of the difference between the prior art and the claims (M.P.E.P. §2141.02)

Brown et al. semiconducting layer formulation or composition and electronic devices differ from the instantly claimed substituted polyacene compounds, an organic semiconducting layer formulation and electronic devices in that the instantly claimed

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substituted polyacene compounds, an organic semiconducting layer formulation and electronic devices comprise polyacene compound of formula I wherein at least one of the variables R_1 to R_{12} is substituted C_1 - C_{40} hydrocarbyl group while Brown et al. teach a polyacene in general, its derivative, its formulation with a organic binder and electronic devices. See columns 3 and 4.

However, Minakata teach substituted polyacene compounds, semiconducting layer formulation or composition of a polyacene compound of formula II and electronic devices; wherein all the variables R_1 to R_{10} are substituted C_1 - C_{40} hydrocarbyl group, halogens, silyls, hyreoxyl, alkoxy, esters, cyanos, amides aminos, and ethers. Minakata teach a semiconducting layer formulation wherein the solid content is 0.02 to 5%. See the disclosure of the invention, column 2, lines 31-39, column 3, lines 1-15, the working examples and the claims.



formula II

Finding of prima facie obviousness--rational and motivation (M.P.E.P.. §2142-2143)

The instantly claimed polyacene compound, semiconducting layer formulation and electronic device would have been suggested to one of ordinary skill because one of ordinary skill wishing to obtain polyacene compounds, semiconducting layer

formulation and electronic device layer is taught to select a substituted polyacene compound of Brown et al. and Minakata.

One of ordinary skill in the art would have a reasonable expectation of success in practicing the instant invention by varying the polyacene compounds that make up the composition including the binder, the ratio of additives in the formulation and the substituents on the polyacene compound of Brown et al. and Minakata to arrive at the instantly claimed substituted polyacene compounds, an organic semiconducting layer formulation and electronic devices. Said person would have been motivated to practice the teaching of the references cited because they demonstrate that semiconducting layer formulation with substituted polyacene compound and organic binder are useful in electronics and other industrial applications. Further, one of ordinary skill in the art would have been motivated to correlate the teachings of Brown et al. and Minakata in order to obtain substituted polyacene compounds, an organic semiconducting layer formulation with organic binder and electronic devices. The instantly claimed invention would therefore have been obvious to one of ordinary skill in the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chukwuma O. Nwaonicha whose telephone number is 571-272-2908. The examiner can normally be reached on Monday thru Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne (Bonnie) Eyler can be reached on 571-272-0871. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Chukwuma O. Nwaonicha/
Examiner, Art Unit 1621

(for)

/Sikarl A. Witherspoon/
Primary Examiner, Art Unit 1621

Yvonne (Bonnie) Eyler
Supervisory Patent Examiner,
Technology Center 1600